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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,294	07/18/2003	David Chown	30020591-02	7249

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EXAMINER	
LIU, LI	

ART UNIT	PAPER NUMBER
2613	

NOTIFICATION DATE	DELIVERY MODE
01/08/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/622,294	CHOWN, DAVID	
	Examiner	Art Unit	
	LI LIU	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,6 and 9-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,6 and 9-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 July 2003 and 23 November 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/27/2008 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1, 2, 5, 6 and 9-12 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 5, 6 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraguchi (US 5,432,874) in view of Nakanishi et al (US 6,374,021) and Kato et al (US 5,661,835).

1). With regard to claim 1, Muraguchi disclose a system (Figure 2) for converting first and second signals representative of payload (High Speed Electrical Signal in Figure 2, the video, audio, data signals etc. column 4 line 39-40) and supervisory (Low Speed Electrical Signal in Figure 2, control signal, etc., column 4, line 40-41) information, respectively, between an electrical format and a WDM aggregated optical format, the system comprising:

at least one first converter (the Electro-Optic Converter 8 in Figure 2) for converting said first signal between said electrical format and a first, disaggregated optical format (column 4, line 56-68),

at least one second converter (the Electro-Optic Converter 9 in Figure 2) for converting said second signal between said electrical format and a second, disaggregated optical format (column 4, line 56-68), and

at least one optical WDM converter (the Multiplexer 10 in Figure 2) that converts said first and second signals between said first and second disaggregated optical formats and said WDM aggregated optical format (column 3 line 62-65, the multiplexer 10 multiplexes the two optical signals into WDM aggregated optical format),

wherein at least one of said at least one first converter, said at least one second converter and said at least one optical WDM converter are integrated to a single self-contained module (transmitting apparatus, Figure 2) by means of signal propagation paths that exempt from slices (Figure 2, no splices are used in the system; column 1 line 64 to column 2 line 9; and in column 3 line 48 to column 5 line 44. In Figure 2 and the detailed description, Muraguchi teaches an integrated transceiver; there is no

discrete components having pigtails and needed to be spliced together. Therefore, in Muraguchi's system, splices as defined by the applicant are not needed).

Muraguchi teaches that all components of the transceiver are within the transceiver apparatus (1 or 2 in Figure 2); but, Muraguchi does not show the details of the multiplexing structure. Muraguchi does not expressly disclose: (A) wherein at least one of said at least one first converter, said at least one second converter and said at least one optical WDM converter are in a hermetic enclosure, and (B) the WDM converter includes a beam splitter, wherein the beam splitter is aligned with an optical connector for conveying said first and said second signals in said WDM aggregated optical format, the system further comprising: a first focusing element interposed between said beam splitter and said optical connector, and an optical isolator interposed between said beam splitter and said first focusing element.

With regard to item (A), however, to put the components of a transceiver in a hermetic enclosure or a sealed module is well known and a widely practice in the art. Nakanishi et al teaches an optical transceiver module in that the first converter (e.g., LD 169 in Figures 21 and 22), the second converter (e.g., PD 168 in Figures 21 and 22) and the optical WDM converter (the WDM filter 171 in Figures 21 and 22) in a hermetic enclosure (Figures 23-25, sealed package. Also refer to Figure 7, the house 60).

Nakanishi et al provides a transceiver module that has a simple structure, and is easily manufacturable, and high reliability, and low cost; and the transceiver sealed in a package can be easily shielded from the harmful effects of a hazardous environment. Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to apply a hermetic enclosure that encloses the O/E converters and the WDM as taught by Nakanishi et al to the system of Muraguchi so that a compact, high reliable and low cost transceiver module can be obtained and the harmful effects of a hazardous environment can also be shield.

With regard to item (B), Kato et al teaches a WDM system with beam splitter, focusing lens, and isolator etc. As shown in Figures 4-6, Kato et al teaches that the WDM converter (e.g., 3 in Figure 6) includes a beam splitter (the multiplexer 3 is a beam splitter), wherein the beam splitter is aligned with an optical connector (e.g., the optical connector 41a, which is a ferrule) for conveying a first light (e.g., the signal light from 6b) and a second light (e.g., the light from laser 1 in Figure 6) in the WDM aggregated optical format (the multiplexer 3 combines the two lights into aggregated optical format), the system further comprising: a first focusing element (e.g., the lens 42a in Figure 6) interposed between said beam splitter (3 in Figure 6) and said optical connector (41a in Figure 6), and an optical isolator (e.g., 4a in Figure 6) interposed between said beam splitter (3 in Figure 6) and said first focusing element (42a in Figure 6).

By using Kato et al's WDM structure (having beam splitter 3, isolator 4a, optical connector 41a, a focus lens 42a between the beam splitter 3 and optical connector 41a, a second focus lens 42c between beam splitter 3 and the light source 22, a third focus lens 42b between the beam splitter 3 and signal light from 6b) in Muraguchi's system, the combination of Muraguchi and Nakanishi et al and Kato et al discloses an optical communication module shown as in following Figure O1:

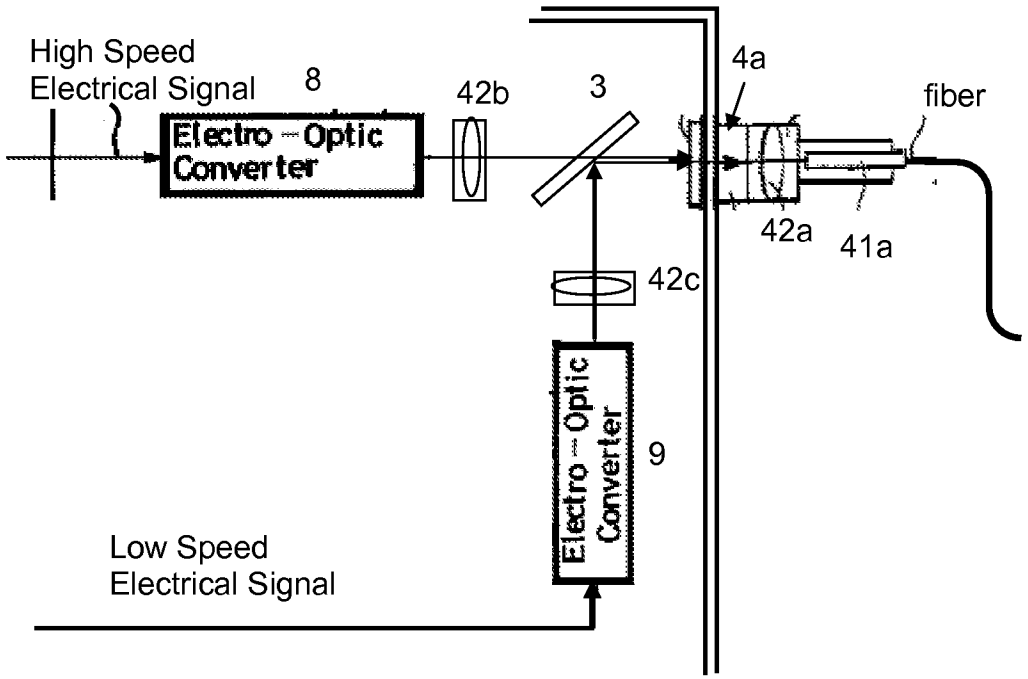

Figure O1

Kato et al teaches a low cost, compact structure, which is easy to handle; and the beam splitter has a simple structure and small size, and the optical isolator allows only light propagating in one direction and blocks light propagating in the opposite direction, then the interference to the optical components are reduced. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the beam splitter, optical connector, focusing lens and isolator as taught by Kato et al to the system of Muraguchi and Nakanishi et al so that the payload optical signal and supervisory optical signal can be conveniently combined by the beam splitter, and the WDM aggregated optical format can be easily inputted into the fiber via the focusing lens, and the maintenance and replacement of fiber is made easier by using the optical connector, and loss due to the alignment is reduced, and interference

is also can be reduced by the isolator, and a low cost, compact, integrated, simple structure transmitter system can be obtained.

2) With regard to claim 5, Muraguchi and Nakanishi et al and Kato et al disclose all of the subject matter as applied in claim 1 above. And Muraguchi and Nakanishi et al and Kato et al further disclose whereint said beam splitter is arranged to define an optical signal reflection path between said second converter and optical connector (as shown in Figure O1, the combination of Muraguchi and Nakanishi et al and Kato et al discloses that the beam splitter is arranged to define an optical signal reflection path between the second "Electro-Optic Converter 9" and optical connector 41a).

3) With regard to claim 6, Muraguchi and Nakanishi et al and Kato et al disclose all of the subject matter as applied in claims 1 and 5 above. And Muraguchi and Nakanishi et al and Kato et al further disclose wherein a second focusing elements is interposed between said beam splitter and said second converter (as shown in Figure O1, the combination of Muraguchi and Nakanishi et al and Kato et al discloses that a second focusing lens 42c is interposed between said beam splitter 3 and said second "Electro-Optic Converter 9").

4). With regard to claim 9, Muraguchi and Nakanishi et al and Kato et al disclose all of the subject matter as applied to claim 1 above. And Muraguchi further disclose wherein said first converter and said second converter include sources (laser light and LED, column 3, line 58-62) driven with said first and said second signals in said electrical format (High Speed or Low Speed Electrical Signals), respectively, and wherein said optical WDM converter includes a WDM combiner (Multiplexer 10 in

Figure 1) to combine said first and said second signals in said first disaggregated optical format and said second disaggregated optical format (Figure 2) to produce said WDM aggregated optical format (multiplexed signals to fiber 3, Figure 2), the system thus comprising a transmitter module (Transmitter Apparatus 1, Figure 2, column 1 line 65 or column 3 line 38-40).

But, Muraguchi discloses that one light source is laser source and another is a LED; Muraguchi does not disclose that the two light sources are lasers. However, since the laser source has a narrow band width and is widely used in the art, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace LED with the laser diode so to increase the signal capacity and transmission rate.

5). With regard to claim 10, Muraguchi and Nakanishi et al and Kato et al disclose all of the subject matter as applied to claim 1 above. And Muraguchi further disclose wherein the optical WDM converter includes a WDM splitter (Demultiplexer 11 in Figure 2) for de-multiplexing the WDM aggregated optical format (inputted from fiber 6 in Figure 2) into a first disaggregated optical format (the Laser Light Signal to O/E Converter 12 in Figure 2) and said second disaggregated optical format (the Light Signal to O/E Converter 13 in Figure 2), and wherein said first converter and said second converter include photoelectric converters (Opto-Electro Converter in Figure 2) for converting said first disaggregated optical format and said second disaggregated optical format into said first and second signals in said electrical format (output High Speed Electrical Signal and Low Speed Electrical Signal, respectively, column 3 line 65

to column 4 line 3), the system thus comprising a receiver module (Figure 2, column 1 line 65 to column 2 line 2).

6). With regard to claim 11, Muraguchi and Nakanishi et al and Kato et al disclose all of the subject matter as applied in claim 1. And Muraguchi further disclose the system includes:

a pair of said first converters (8 and 12 in Figure 2) in the form of a first laser source (8 in Figure 2) and a first photoelectric converter (12 in Figure 2), respectively;

a pair of said second converters (9 and 13 in Figure 2) in the form of a second light source (9 in Figure 2) and a second photoelectric converter (13 in Figure 2), respectively; and

a pair of said optical WDM converters (10 and 11 in Figure 2), in the form of a WDM combiner (10 in Figure 2) and a WDM splitter (11 in Figure 2), respectively;

such that said first laser source and said second light source are arranged for converting a first pair of first and second signals representative of payload (High Speed Electrical Signal in Figure 2, the video, audio, data signals etc. column 4 line 39-40) and supervisory information signal (Low Speed Electrical Signal in Figure 2, control signal, etc., column 4, line 40-41), respectively, from said electrical format into a first pair of first disaggregated optical format (Laser Light Signal in Figure 2) and second disaggregated optical format signals (Light Signal in Figure 2) and said WDM combiner (10 in Figure 2) is adapted to convert said first pair of first and second disaggregated optical format signals into a first WDM aggregated optical format signal (the multiplexed signal to fiber 3 in Figure 2), and

wherein said WDM splitter (11 in Figure 2) is adapted to convert a second WDM aggregated optical format signal (Signals from fiber 6) into a second pair of first (the Laser Light Signal to O/E 12) and second (the Light Signal to O/E 13) disaggregated optical format signals, and said first photoelectric converter (12 in Figure 2) and said second photoelectric converter (13 in Figure 2) are adapted to convert said second pair of first and second disaggregated optical format signals into a second pair of first and second signals representative of payload (High Speed Electrical Signal in Figure 2, the video, audio, data signals etc.) and supervisory (Low Speed Electrical Signal in Figure 2, control signal, etc., column 4, line 40-41) information in said electrical format, the system thus comprising a transceiver module (Transmitting apparatus, Figure 2).

But, Muraguchi discloses that the second light source is a LED, not the laser light. However, since the laser source has a narrow band width and is widely used in the art, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace LED with the laser diode so to increase the signal capacity and transmission rate.

7) With regard to claim 12, Muraguchi and Nakanishi et al and Kato et al disclose all of the subject matter as applied in claims 1, 5 and 6 above. And Muraguchi and Nakanishi et al and Kato et al further disclose wherein a third focusing elements is interposed between said beam splitter and said first converter (as shown in Figure O1, the combination of Muraguchi and Nakanishi et al and Kato et al discloses that a third focusing lens 42b is interposed between the beam splitter 3 and the first "Electro-Optic Converter 8").

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muraguchi and Nakanishi et al and Kato et al as applied to claim 1 above, and in further view of Shigeta et al (US 2002/0064333).

Muraguchi and Nakanishi et al and Kato et al disclose all of the subject matter as applied in claim 1 above. Muraguchi further discloses wherein said first converter and said second converter have associated signal processing electronics to generate said first and said second signals representative of said payload and said supervisory information, in said electrical format (Figure 2, the High Speed Electrical Signal and Low Speed Electrical Signal are applied to the E/O Converters 8 and 9 in Figure 2, that is, the signal processing electronics must be present in the system so to generate the two electrical signals).

But, Muraguchi does not expressly disclose that the signal processing electronics is integrated to said single self-contained module.

However, Shigeta et al, in the same field of endeavor, discloses a processing electronics being integrated to a single self-contained module (e.g., Figure 17, the semiconductor lasers 74, the processing electronics or driver electronics 73, controller and multiplexer are integrated in the transmitter package 79, [0114], and [0015]-[0018], [0123]; according to Shigeta et al, the package can be a “box-shape”, [0005] and [0009]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to put the signal processing electronics within the

transceiver module as taught by Shigeta et al to the system of Muraguchi and Nakanishi et al and Kato et al so that a compact transceiver can be obtained.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Calvani et al (US 5,329,394);

Bloom et al (US 5,710,652);

Lin et al (US 2002/0171890).

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LI LIU whose telephone number is (571)270-1084. The examiner can normally be reached on Monday-Friday, 8:30 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571)272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Li Liu/
Examiner, Art Unit 2613
December 30, 2008